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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/711,568

09/24/2004

Chyh-Yih Chang

13216-US-PA

5567

31561

7590

11/01/2005

JIANQ CHYUN INTELLECTUAL PROPERTY OFFICE
7 FLOOR-1, NO. 100
ROOSEVELT ROAD, SECTION 2
TAIPEI, 100
TAIWAN

EXAMINER

THOMAS, LUCY M

ART UNIT

PAPER NUMBER

2836

DATE MAILED: 11/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/711,568	CHANG, CHYH-YIH	
	Examiner	Art Unit	
	Lucy Thomas	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13-18 is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☒ Claim(s) 19 and 20 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 9/24/04 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>9/24/2004</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Drawings Objections

1. The drawings are objected to because Figure 3 and Figure 4, which are disclosed as Prior Art in the specification, are not marked as Prior Art respectively. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.
2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the first and second input ESD protection circuits must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

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Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claims 7 and 19-20 are objected to because of the following informalities:

Recitation of "an" in Claim 7, line 12 should be corrected to "a."

Claim 19 recites the limitation "third and fourth transistors" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 20 further limits Claim 16 with "a first input ESD protection circuit, coupled and among the first internal circuit, an input pad of the first internal circuit, the first high power line and the first low power line; and a second input ESD protection circuit, coupled and among the second internal circuit, an input pad of the second internal circuit, the second high power line and the second low power line." The Figures in the disclosure for various embodiments, show only four ESD protection circuits, which are already recited in Claim 16. None of the figures show the first and second input ESD protection circuits coupled as recited in the Claim.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al. (US 6,618,230) in view of Gonthier (US 6,208,126). Regarding Claim 1, Liu et al. discloses a separated power electro-static discharge (ESD) protection circuit (Figures 1-6) coupled between a first power Line Vcc1 and a second power Line Vcc2, the separated power ESD protection circuit comprising: a first diode, having an anode and a cathode, wherein the anode is coupled to the first power Line (see Figure 3); a first metal-oxide-semiconductor (MOS) transistor, having a gate, a source and a drain (Figures 4), and a second diode, having an anode and a cathode, wherein the anode is coupled to the second power Line, the cathode is coupled to the first power Line (Figure

3). Liu et al. fails to disclose a first transistor first diode combination wherein, the drain is coupled to the cathode of the first diode and the source is coupled to the second power line. Gonthier discloses a first MOS transistor 30 and a first diode D1 combination (Figures 4 and 5) in a bidirectional switch device. It would have been obvious to those skilled in the art to modify Liu's circuit to replace a diode with a diode connected transistor as taught by Gonthier, because it is known in the art that the use of a diode connected transistor constitutes a parasitic silicon-controlled rectifier (SCR) and provides an effective static discharge route.

Regarding Claim 2, Liu et al. discloses a separated power ESD protection circuit, further comprising a second MOS transistor having a gate, a source and a drain, wherein the source is coupled to the first power line (Figure 4). Liu et al. fails to disclose a second transistor second diode combination wherein, the drain is coupled to the cathode of a second diode. Gonthier discloses a second MOS transistor 31 and a second diode D2 combination (Figures 4 and 5) in a bidirectional switch device. It would have been obvious to those skilled in the art to modify Liu's circuit to replace a diode with a diode connected transistor as taught by Gonthier, because it is known in the art that the use of a diode connected transistor constitutes a parasitic silicon-controlled rectifier (SCR) and provides an effective static discharge route. Claims 7 and 8 recites the elements of Claims 1 and 2 with additional elements of a plurality of first series diodes, and a plurality of second series diodes. Liu et al. discloses a plurality of first series diodes, and a plurality of second series diodes (Figure 3).

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6. Regarding Claims 4, 6, 10, and 12, Liu et al. discloses a first MOS transistor, which is a P-type MOS transistor 28 as recited in Claim 4, and a second MOS transistor, which is a P-type MOS transistor 30 as recited in Claim 6 (Figure 6, Column 5, lines 1-16). Regarding Claims 3, 5, 9, and 11, Liu et al. fails to disclose a first MOS transistor, which is an N-type MOS transistor as recited in Claims 3 and 9, and a second MOS transistor, which is an N-type MOS transistor as recited in Claims 5 and 11. It would have been obvious to those skilled in art at the time the invention was made to provide a first N-type MOS transistor and a second N-type transistor and configure the circuit accordingly as N-type and P-type MOS transistors are art recognized equivalents.

Allowable Subject Matter

7. Claims 13-18 are allowed.

8. The following is a statement of reasons for the indication of allowable subject matter: Claims 13-18 recite an integrated circuit to protect internal circuits from electrostatic discharge using multiple ESD protection circuits, each comprising multiple diode strings and/or MOS transistor combination recited in Claim 13. The combined limitations are not disclosed by the Prior Art of Record, thereby rendering the claimed combination allowable.

9. Claims 19-20 would be allowable if rewritten to overcome the objections indicated under Claim Objections and Drawing Objections, set forth in this Office action.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 6,075,686.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lucy Thomas whose telephone number is 571-272-6002. The examiner can normally be reached on Monday - Friday 8:00 AM - 4:30 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on 571-272-2058. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LT
October 25, 2005



EXAMINER
LUCY THOMAS